YUKON AREA COMMERCIAL AND SUBSISTENCE SALMON FISHERIES 1993 MANAGEMENT PLAN

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By

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YUKON AREA COMMERCIAL AND SUBSISTENCE SALMON FISHERIES 1993 MANAGEMENT PLAN

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INTRODUCTION

This management plan was developed to inform fishermen, processors, and other interested persons of the status of the 1993 Yukon River salmon runs and strategies that may be used to manage the various salmon fisheries. The Commercial Fisheries Management and Development Division of the Alaska Department of Fish and Game is responsible for the management of commercial and subsistence fisheries in the Yukon Area. Five species of Pacific salmon occur in the Yukon River, with chum salmon being the most abundant. The chum salmon return is made up of an early (summer chum) run and a later (fall chum) run.

The Yukon Area includes all waters of the Yukon River drainage in Alaska and coastal waters from Canal Point Light, near Cape Stephens, to the Naskonat Peninsula. For management purposes, the area is divided into six districts and 10 subdistricts (Figure 1). Commercial fishing occurs along the entire 1,200 mile length of the Yukon River in Alaska, and in the lower 220 miles of the Tanana River. The Lower Yukon Area (Districts 1, 2, and 3) includes the coastal waters of the delta and that portion of the drainage from the mouth to Old Paradise Village (river mile 301). The Upper Yukon Area (Districts 4, 5, and 6) is that portion of the drainage upstream of Old Paradise Village to the US/Canada border, including the lower 220 miles of the Tanana River. Commercial, Indian Food Fish, and Domestic fisheries also occur in Canada, with fishery management activities conducted by the Canadian Department of Fisheries and Oceans (DFO).

Subsistence fishing occurs throughout most of the Yukon River drainage. Subsistence use has the highest priority among beneficial uses of the resource. A majority of the commercial fishermen take salmon for both commercial and subsistence purposes. In order to enforce commercial fishing regulations, it is necessary to place some restrictions on the subsistence fishery. Throughout the fishing season, however, substantially more fishing time is allowed for subsistence than for commercial purposes.

In 1986, the subsistence law was amended to limit subsistence hunting and fishing to rural Alaska residents. To allow continued participation in salmon fisheries by residents of non-rural communities, the Alaska Board of Fisheries created personal use salmon fisheries. In December 1989, the Alaska Supreme Court overturned the 1986 subsistence law as unconstitutional. During the 1990, 1991, and 1992 seasons, all fishermen that had been required to have personal use permits have fished under subsistence regulations. In February 1993, the Board of Fisheries adopted regulations that created the Fairbanks Non-Subsistence Area (Figure 2). The subsistence salmon fishery that has occurred within this area is now classified as a personal use fishery. Personal use salmon permits are now required in Subdistrict 6-C and the Delta River fisheries.

Management of the Yukon River commercial salmon fishery is complex because of the difficulty in determining run size, harvesting of mixed stocks, increasing efficiency of the commercial fleet, and allocation issues. The overall goal of the department's research and management program is to manage the various salmon runs for optimum sustained yield under the policies set forth by the Alaska Board of Fisheries. However, escapement levels required to produce maximum sustained

yields cannot be determined at this time due to the lack of an adequate database. Current escapement goals in the Yukon River drainage are based on historic escapement trends in key spawning index areas which are surveyed or counted annually. In most cases, the average historic escapement level for each index area is considered a minimum escapement goal to be met or exceeded each season.

Due to the mixed stock nature of the fishery, some tributary populations may be under- or over harvested in relation to their actual abundance. Based on current knowledge, it is impossible to manage individual stocks independently. Primary management tools are guideline harvest ranges, established by the Alaska Board of Fisheries (Table 1), and emergency orders, which are used to open and close the commercial fishing seasons, establish fishing period frequency and duration, and establish mesh size restrictions. In general, based upon evaluation of run abundance, the department attempts to manage the commercial fisheries such that each district's harvest is proportionately similar within their respective guideline harvest ranges.

STATUS OF STOCKS AND FISHERY

Chinook Salmon

Commercial chinook salmon catches in the Alaskan portion of the Yukon River drainage have shown a decreasing trend. The recent 5-year (1987-1991) average commercial harvest was 108,042 fish compared to the previous 5-year (1982-1986) average of 127,523 chinook salmon (Table 2). The recent 5-year average chinook salmon subsistence harvest in Alaska was 50,060 fish, which was a 22% increase over the previous 5-year average of 41,015 chinook salmon (Table 6). Total Canadian harvests have averaged 19,366 chinook salmon annually (1987-1991) (Table 7).

Chinook salmon spawning stocks are widely distributed throughout the Yukon River drainage. Stock identification studies indicate that approximately 57% of the chinook salmon harvest in Alaska is spawned in Canada. Information acquired through scale pattern analysis (SPA), and tagging studies indicate that Canadian chinook salmon stocks have undergone unacceptably high harvest rates in recent years. Efforts to reduce this exploitation rate have resulted in increased Canadian mainstem Yukon River spawning escapements during the past five years compared to the period 1985 to 1987 (Table 8).

Due to the lack of reliable total population estimates, exploitation rates cannot be accurately estimated at this time for Alaskan chinook salmon stocks. Chinook salmon minimum escapement goals have been established by the department for eight Alaskan streams or index areas (Table 8). Aerial survey escapement data indicate that spawning escapement goals for middle river stocks (primarily Tanana River drainage) have not been met during some recent years, however, escapement

goals for lower river stocks (Yukon River drainage below the Koyukuk River) have generally been achieved in recent years. It should be understood that caution must be used when comparing aerial survey results between years due to the variability inherent to this methodology.

Summer Chum Salmon

The recent 5-year average (1987-1991) estimated commercial harvest was 974,059 summer chum salmon (Table 3). The majority of the commercial harvest takes place in Districts 1 and 2 and Subdistrict 4-A. Approximately 214,580 summer chum salmon are taken annually (1987-1991 average) for subsistence use throughout the drainage (Table 6).

The Andreafsky and Anvik Rivers are the major summer chum salmon-producing rivers (Table 10). Escapements of over one million summer chum salmon have been documented by sonar in the Anvik River. The Koyukuk, Nulato, and Tanana Rivers are also important summer chum salmon-producing systems. Summer chum salmon escapements in the Anvik River were above the escapement goal in 1988, 1989, and 1991, however, spawning escapements to other Yukon River tributaries, based on limited aerial survey information, generally appear to have been below desired levels from 1988 to 1992.

Fall Chum Salmon

Commercial fall chum salmon catches in the Alaskan portion of the Yukon River drainage have shown a decreasing trend. The recent 5-year (1987-1991) average estimated commercial harvest of 162,541 fish is a reduction of approximately 30% compared to the previous 5-year (1982-1986) average of 230,700 fall chum salmon (Table 4). The recent 5-year average fall chum salmon subsistence harvest in Alaska was 188,768 fish (excluding 115,829 fish involved in illegal sales in 1987), which was a 28% increase over the previous 5-year average of 147,653 fall chum salmon (Table 6). During the period 1987-1991, approximately 90% of the annual reported subsistence harvest has occurred in the Upper Yukon Area (Table 6). Total Canadian fall chum salmon harvests have increased approximately 30% from an average of 26,121 fish annually (1982-1986) to 34,021 fish annually (1987-1991) (Table 7).

Major fall chum salmon spawning areas are located in the Tanana and Porcupine River drainages, and within the Canadian portion of the Yukon River drainage. Minimum escapement goals for the Toklat, Delta, and Sheenjek Rivers are 33,000, 11,000, and 64,000 respectively, while the goal for the Fishing Branch River is 50,000-120,000 fall chum salmon (Table 11). Unlike the chinook and summer chum salmon index goals, the fall chum salmon escapement goals are based on estimates of total abundance. In addition, annual estimates of border passage and subsequent spawning escapement also exist for fall chum stocks in the Canadian portion of the upper mainstem Yukon

River. The escapement goal for the Canadian Yukon River mainstem stock is for greater than 80,000 fall chum salmon spawners.

Historical tagging studies conducted near Galena and Ruby indicated that the early segment of fall chum salmon may be bound primarily for the Porcupine River and Canadian portion of the Yukon River. The later segment of the fall chum salmon run, although likely mixed with other stocks, is believed to be destined primarily for the Tanana River drainage. Stock identification studies, using protein genetics, are presently underway to improve our understanding of fall chum salmon timing by spawning stock, through the fisheries.

During the 1980s, there was concern for the health of fall chum salmon stocks because spawning escapements were below desired levels from 1982 through 1984 (Table 11). Additional regulatory restrictions adopted by the Board of Fisheries in 1983 and 1986 resulted in generally improved spawning escapements during the late 1980s. However, spawning populations in the Toklat River, Fishing Branch River, and the Yukon River mainstem in Canada have shown less improvement than other spawning areas. Therefore, continued conservative management actions will be necessary to rebuild these stocks.

Coho Salmon

Commercial coho salmon catches in the Alaskan portion of the Yukon River drainage have shown an increasing trend. Although there was no commercial fishery allowed in 1987 due to fall chum management concerns, the recent 5-year (1987-1991) average commercial harvest of 63,168 fish was a 33% increase over the previous 5-year (1982-1996) average of 47,473 coho salmon (Table 5). Similarly, the recent 5-year average coho salmon subsistence harvest in Alaska of 48,578 fish (excluding 36,291 fish involved in illegal sales in 1987), was a 39% increase over the previous 5-year average of 35,108 coho salmon (Table 6).

Coho salmon escapement assessment is very limited in the Yukon River drainage due to funding limitations and survey conditions at that time of year. Most of the available information has been collected from the Tanana River drainage (Table 12). Coho salmon escapements have increased during the past decade. An escapement index goal of 9,000 coho salmon has been established for the Delta Clearwater River.

U.S./Canada Treaty Negotiations

Negotiations were initiated in 1985 between the U.S. and Canada regarding a Yukon River salmon treaty. Substantial progress has been made to date on several issues, but some important issues remain to be settled.

A six-year stabilization program, ending after the 1995 season, has been agreed to for chinook salmon in the mainstem Yukon River in Canada. The objective of the program is to stabilize the stock by achieving a spawning escapement of 18,000 or more chinook salmon for each year through 1995. This stabilization spawning objective was established to prevent any further decrease in chinook salmon escapements. During the stabilization period, Canada will manage all of its chinook salmon fisheries on the mainstem Yukon River within a guideline harvest range of 16,800 in years of weak returns to 19,800 in years of strong returns.

The management agencies are to develop a chinook salmon rebuilding program to begin in 1996 for the purpose of achieving a more optimal spawning escapement level in the future. The Joint Technical Committee (JTC), made up of Canadian and Alaskan fisheries biologists, has recommended a spawning escapement goal of 33,000 to 43,000 chinook salmon as the long term goal of a rebuilding program.

Both countries have agreed to a twelve-year rebuilding program, ending after the 2001 season, for fall chum salmon in the mainstem Yukon River in Canada. The objective of the program is to build the stock by achieving a spawning escapement of 80,000 or more fall chum salmon for all brood years by the year 2001. The program will endeavor to rebuild the stronger brood years in one cycle and the weaker brood years in three cycles in equal increments.

During the rebuilding program, Canada will manage all fall chum salmon fisheries on the mainstem Yukon River in Canada within a guideline harvest range of 23,600 in years of weak returns to 32,600 in years of strong returns. The U.S. will endeavor to deliver to the Canadian border on the mainstem Yukon River, the number of chum salmon necessary to meet the spawning escapement goal for that year in the rebuilding program, and provide for a harvest in Canada within the guideline harvest range. Specific border passage ranges agreed to for 1992 through 1995 are:

1992	74,600-112,600
1993	74,600-112,600
1994	84,600-112,600
1995	103,600-112,600

For the remaining years in the plan thereafter, the U.S. will endeavor to deliver annually between 88,600 and 112,600 chum salmon to the Canadian border.

The two countries agreed not to initiate new fisheries on the Porcupine River for an eight-year period and to consider rebuilding and improving management of Canadian Porcupine River fall chum stocks.

The latest round of negotiations was held in Whitehorse, Yukon Territory, Canada during November 9-13, 1992. Current U.S. and Canada negotiating positions on harvest shares after rebuilding and leeming are quite far apart. Deeming refers to the determination of entitlement each country has to salmon spawned in Canadian portions of the Yukon River. The two countries have been discussing the establishment of a restoration and enhancement fund. Such a fund would be used to help restore and enhance Yukon River salmon stocks through cooperative programs.

OUTLOOK FOR 1993

Chinook Salmon

The majority of chinook salmon returning to the Yukon River are 6-year-old fish; however, 5- and 7-year-old fish make a significant contribution to the run. Spawning ground escapements in 1987, the primary brood year (age-6 in 1993), were judged to be below average in magnitude in Canada, below average to average in the Tanana River, and above average in the lower river area. Survival and production of the 1987 brood year may be below average based on observations of a lower than normal contribution of 5-year-old fish to the 1992 commercial catch. It is expected that the return of 5-year-old fish in 1993 will be average in magnitude based on parent year escapements in 1988 and average proportion of 4-year-old fish observed in the 1992 run. The return of 7-year-old fish in 1993 (1986 year class) is expected to be above average, as the return of the 1986 year class in 1991 as 5-year-old fish and in 1992 as 6-year-old fish was above average. Overall, the 1993 chinook salmon run is anticipated to be slightly below average in strength. The commercial harvest in Alaska is expected to total 86,000-97,000 chinook salmon (80,000-90,000 fish in the Lower Yukon Area and 6,000-7,000 fish in the Upper Yukon Area).

Summer Chum Salmon

Summer chum salmon return primarily as 4-year-old fish, although substantial 5-year-old returns often result from brood years with high survival rates. The return of 4-year-old fish in 1993 will be dependent on production from the 1989 brood year and survival of the resulting cohort. In 1989, the summer chum salmon escapement was above the escapement goal for the Anvik River. No spawning escapement data are available for non-Anvik River summer chum salmon stocks in 1989. However, there has been a trend of lower than desired escapements in non-Anvik River stocks in recent years. The return of 5-year-old fish in 1993 is expected to be below average in strength based upon the below average return of 4-year-old fish in 1992. In summary, based on evaluation of brood year escapements and assuming average survival, it is expected that the Yukon River summer chum salmon run in 1993 will be below average to average in magnitude. The Anvik River summer chum

salmon stock is expected to be the primary contributor to the 1993 run. The commercial harvest is ›ected to be 400,000-800,000 summer chum salmon (257,000-515,500 fish in the Lower Yukon .ea and 143,000-284,500 fish in the Upper Yukon Area). However, because of the mixed stock nature of the fishery, conservative management actions may be necessary to assure adequate escapements for non-Anvik River stocks.

Fall Chum Salmon

Similar to summer chum salmon, fall chum salmon return primarily as 4-year-old fish. Escapements in 1989 (the brood year which will produce 4-year-old fish in 1993) were average to above average, except for the mainstem Yukon River stock in Canada which was poor. The contribution of age-3 fall chum salmon in the 1992 return was near average which, when combined with available escapement data, suggests an average return of 4-year-old fish in 1993. The return of 5-year-old fish (1988 brood year) is expected to be below average based on the very low contribution of age-4 fall chum salmon in the 1992 run. The unusually cold winter of 1988-89 may have contributed to the poor return of age-4 fish in 1992. The overall fall chum salmon return is projected to be 734,000 fish in 1993. Taking into account Alaskan subsistence harvests and Canadian harvests, and the need to rebuild the Toklat and Canadian mainstem stocks, the 1993 commercial harvest is expected to range from 77,900 to 113,000 fall chum salmon (approximately 60,000 to 87,000 fish in the Lower Yukon Area and 17,900 to 26,000 fish in the Upper Yukon Area).

Coho Salmon

Coho salmon return primarily as 4-year-old fish. Comprehensive escapement information for coho salmon is lacking, but escapement surveys in the Tanana River system indicated average escapements in 1989. The commercial coho salmon harvest is anticipated to range from 30,000 to 50,000 fish, but will be dependent on the timing and frequency of fishing periods allowed for fall chum salmon.

NEW REGULATIONS

There are new regulations and changes to existing regulations this year that will affect the management of Yukon River fisheries. The following regulations were adopted by the Alaska Board of Fisheries in Anchorage in March 1993.

Commercial

The waiting period after re-registration (transfer) to another district was increased from 48 hours to 72 hours. District re-registration is accomplished by contacting a local representative of the department. Only one re-registration (transfer) will be allowed prior to July 15. There is no restriction on the number of re-registrations after July 15.

A new regulation was adopted which requires identification of a vessel used by a commercial salmon permit holder to take salmon during the open commercial fishing season in Districts 1, 2, and 3. A vessel must display in permanent symbols at least 12 inches high and 1 inch wide that contrast with the background either the ADF&G vessel license plate number or the fishermen's 5 digit CFEC permit serial number and the letter which follows on both sides of the hull or cabin.

The Alaska State Legislature adopted new statutes in 1992 regarding price paid to fishermen for salmon. This legislation requires that a fish ticket recording the purchase of salmon must include the current price paid per pound for each species of salmon purchased. In addition, a fish processor/buyer is required to prominently post the current price paid for salmon at each location where salmon are purchased.

A reporting requirement adopted by the Board of Fisheries in February 1992, requires commercial fishermen to report the number of salmon harvested during commercial fishing periods and not sold on an ADF&G fish ticket. It appeared that compliance with this new regulation was poor last season. Fishermen are reminded to comply with this reporting requirement in 1993.

Subsistence

A new regulation separates the subsistence and commercial fishing periods in Districts 1, 2, and 3. Subsistence fishing will be open continuously until 24-hours before the opening of the commercial season. During the commercial season, subsistence fishing will only be allowed between commercial periods. Subsistence fishing will open 12 hours after the close of a commercial period and will end 18 hours before the start of the next commercial opening.

In Districts 1, 2, and 3, no person may possess chinook (king) salmon taken for subsistence purposes, unless the dorsal fin has been **immediately** removed. This regulation requires subsistence fishermen to remove the dorsal fin (big one on the back) of chinook salmon immediately upon landing. A person may not sell or purchase salmon from which the dorsal fin has been removed.

In District 4, from September 21 through May 15, the Board of Fisheries adopted regulations that allows jigging gear to be operated by subsistence fishermen from shore ice. Jigging gear consists of a line or lines with lures or baited hooks which are drawn through the water by hand. Additionally, during the review of a petition from the village of Ruby, the Board of Fisheries adopted

a localized no minimum distance for subsistence fishing gear regulation that allows subsistence fishermen, in an area approximately one mile upstream of Ruby on the south bank of the Yukon River, to set or operate subsistence fishing gear as close as practical from other operating commercial or subsistence fishing gear. This regulation will exempt the area known locally as the "slide" from the required 200 feet separation of subsistence fishing gear.

Yukon River Drainage Fisheries Association Petition

The following is a summary of the regulations adopted by the Board of Fisheries during the review of the Yukon River Drainage Fisheries Association's (YRDFA) petition. The YRDFA petitioned the Board of Fisheries and provided recommendations on management actions that could be taken in an effort to rebuild the depressed Toklat River fall chum salmon stock.

5 AAC 01.248. THE TOKLAT RIVER FALL CHUM SALMON REBUILDING MANAGEMENT PLAN.

(a) The Board of Fisheries finds that a comprehensive long term management plan is necessary to promote sustained yield of the Toklat River fall chum salmon stock. The lack of complete resource information concerning the Toklat River fall chum salmon stock limits the ability of the board to develop a long term management approach at this time. The YRDFA presented to the board a Toklat River Fall Chum Salmon Rebuilding Management Plan which contained recommended management actions that would aid in the rebuilding effort of the Toklat River fall chum salmon stock. The objective of the plan is to achieve the minimum escapement objective of 33,000 fall chum salmon on the Toklat River spawning grounds. To accomplish this objective, the Board of Fisheries finds it necessary to implement the following regulations for the season:

(1) Between August 15 through May 15, the Toklat River drainage is closed to sport, personal use, and subsistence fishing.

(2) In the Kantishna River, the following subsistence permit requirements apply as follows:

(A) Between August 15 and December 31, the subsistence salmon harvest limit in the Kantishna River is 2,000 chum salmon;

(B) Between August 15 and December 31, the annual possession limit for the holder of a Kantishna River subsistence salmon fishing permit is 450 chum salmon. Until the fishery harvest limit is reached, permits for additional salmon may be issued by the department.

(C) Salmon may be taken only by set gill net or fish wheel. Except after August 15, once the allowable fishery harvest limit of 2,000 chum salmon is reached, only fish wheels equipped with "live boxes" may be operated; all chum salmon caught must be returned alive to the water. For the purpose of this subsection, a "live box" is a submerged container attached to the fish wheel that will keep fish caught by the fish wheel alive.

(3) The fishery management strategy would be to commercially harvest to a lower level than the overall strength of the Yukon River fall chum salmon return would indicate. The 1993 Yukon Area commercial fisheries will be managed from a low end of 77,900 fall chum salmon to a high end of 113,000 fall chum salmon as follows by district:

(A) Districts 1, 2, and 3: 60,000 to 87,000 fall chum salmon;

(B) Subdistricts 4-B and 4-C: 6,900 to 10,000 fall chum salmon;

(C) Subdistricts 5-A, 5-B, and 5-C: 6,200 to 9,000 fall chum salmon;

(D) Subdistrict 5-D: 1,000 to 1,500 fall chum salmon;

(E) District 6: 3,800 to 5,500 fall chum salmon;

(1) Subdistricts 6-B and 6-C may harvest to a different level within their guideline harvest range (5 AAC 05.367. (5)) depending on inseason run strength indicators.

(4) In Subdistricts 6-A and 5-A, during the commercial fall chum salmon season there will be no more than one 24-hour commercial period per week.
(5) In Subdistrict 5-A, following the commercial salmon season closure, salmon may be taken by subsistence fishermen from 6:00 p.m. Tuesday until 6:00 p.m. Sunday.

(b) The provision of this section supersedes corresponding commercial, sport, personal use, and subsistence regulations contained in 5 AAC.

The Board of Fisheries also adopted the YRDFA's recommendation to eliminate coho salmon from the Upper Yukon Area fall season guideline harvest range (5 AAC 05.367). The Board of Fisheries will be reviewing the Toklat River Fall Chum Salmon Rebuilding Management Plan during the 1993/1994 meeting cycle.

MANAGEMENT STRATEGY-LOWER YUKON AREA (DISTRICTS 1, 2, AND 3)

Commercial Fisheries

Chinook and Summer Chum Salmon

Management of the chinook and summer chum salmon runs is made difficult by the overlapping run timing of these species. The harvest of summer chum salmon, for example, can be largely a function of management strategies and actions applied to the chinook salmon fishery. The chinook and summer chum salmon harvests are managed by field announcement to schedule season openings and closures, fishing periods, and gill net mesh size restrictions. The Board of Fisheries has established a chinook salmon guideline harvest range of 60,000 to 120,000 fish for Districts 1 and 2 combined, and 1,800 to 2,200 for District 3. The guideline harvest range for summer chum salmon is 251,000 to 755,000 fish for Districts 1 and 2 combined, and 6,000 to 19,000 fish for District 3.

The directed commercial chinook salmon fishery will open by emergency order on a staggered basis beginning with District 1, when increasing subsistence and/or test-net catches have occurred over a 7 to 10 day period. This strategy of allowing the early portion of the run to build, prior to commercial fishing, provides for uninterrupted subsistence fishing in the Lower Yukon Area, and llows passage of a portion of the early run segment out of the lower Yukon districts. The fish that ass out of the lower districts are bound primarily for middle and upper river areas and are subject o intensive harvest pressure along the entire course of their migration.

Unrestricted mesh size fishing periods are anticipated to be no more than 12 hours in duration. In District 1, fishing periods are expected to begin at 6:00 p.m. on Mondays and Thursdays and continue until 6:00 a.m. the following day. It is expected that fishing periods, in Districts 2 and 3, will begin at 6:00 p.m. Wednesdays and Sundays and continue until 6:00 a.m. the following day. District 3 fishing periods may vary from this schedule, because it has a separate guideline harvest range.

Test fishing, commercial catch, sonar passage estimates at Pilot Station, and age composition information will be monitored to judge salmon run abundance and timing. If run strength and harvest levels develop as anticipated, the use of unrestricted mesh size gill nets will cease when the combined Districts 1 and 2 harvest approaches 60,000-70,000 chinook salmon. The harvest of chinook salmon in gill nets restricted to 6-inch maximum mesh size is included in the guideline harvest range. It is expected that the total commercial harvest of chinook salmon will be approximately 80,000 to 90,000 fish for Districts 1 and 2 combined. The harvest is expected to range between 1,800 and 2,000 chinook salmon in District 3.

Since 1985, summer chum salmon directed fishing periods have been implemented early in the season if the run: 1) is judged to be at least average in strength, or 2) occurs with similar timing to the

chinook salmon run. It is anticipated that summer chum salmon directed fishing periods may be scheduled during the chinook salmon directed season in 1993. Six inch maximum mesh size fishing periods are anticipated to be 6 to 12 hours in duration depending on the strength of the summer chum salmon return. As with other salmon stocks, an effort will be made to spread the harvest out over the run, so that no one segment is overexploited. It is anticipated that the summer chum salmon harvest should be between the lower end and the mid-point of the guideline harvest ranges due to the anticipated below average to average run. There is a possibility that an unrestricted mesh size fishing period, or periods, may be established during early July, if the summer chum return appears to be below average. This strategy may be utilized if additional harvest of chinook salmon can be allowed and a lower exploitation rate on summer chum salmon is necessary.

The summer season commercial fishery will close July 15, or earlier, depending on the magnitude and timing of the chinook and summer chum salmon runs. An earlier closure may be necessary because of below average summer chum salmon escapements in the Andreafsky River in recent years. The District 3 commercial fishing season may close prior to the other districts because of lower marketability of fish late in the run and to provide for increased subsistence fishing opportunity. Since Districts 1 and 2 have combined guideline harvest ranges, the overall harvest level will determine when the directed chinook and summer chum salmon seasons end. It may not be possible to allow an equal amount of fishing time for each district.

Fall Chum Salmon

The fall chum salmon guideline harvest range established by the Board of Fisheries for 1993 for Districts 1, 2, and 3 is 60,000-87,000 fish. The department will monitor abundance inseason using the lower Yukon River test fishery, subsistence catches, and sonar passage estimates at Pilot Station. These data, in combination with the preseason projection, will constitute the basis for decisions regarding management of these stocks. The sonar project at Pilot Station will be using new equipment in 1993, which should provide more accurate passage estimates.

The preseason projection is for a below average fall chum return. The board, department, and YRDFA have jointly agreed upon conservation actions necessary in order to rebuild these stocks. The overall strategy would be to commercially harvest toward the lower end of the guideline harvest range. In addition, the YRDFA agreed to establish two commercial harvest windows for the Lower Yukon Area with the intent of spreading out the commercial harvest in order to reduce the risk of over-harvest on any one stock.

It is expected that 50% of the allowable harvest will occur between July 16 and August 8. The remainder of the allowable harvest is anticipated to occur between August 9 and August 31. If 50% of the allowable commercial harvest is taken prior to the end of the first harvest window, commercial fishing will not resume until the next harvest window. Harvest shortfalls in the first harvest window will be carried over to the second harvest window.

Fishermen will be required to register for the Set Net Only Area prior to the opening of the fall mmercial fishing season. Commercial fishing period duration will likely be 12 hours in the Set et Only Area of District 1, and 6 hours duration in the remainder of the Lower Yukon Area. Fishing periods in the Set Net Only Area will probably be scheduled to occur overnight, while fishing periods in the remainder of the Lower Yukon Area will be scheduled for daylight hours.

Coho Salmon

Coho and fall chum salmon runs overlap to a considerable extent. Because of this overlap, and because of the overriding importance of fall chum salmon conservation, the harvest of coho salmon will be a function of management strategies directed towards fall chum salmon in 1993.

Subsistence Fisheries

In the Lower Yukon Area, salmon may be taken by subsistence fishermen seven days per week until 24 hours prior to the opening of the commercial fishing season. In March 1993, the Board of Fisheries adopted a new subsistence regulation specifically designed to eliminate the sale of ubsistence caught fish during commercial openings. This new regulation separates the subsistence and commercial fishing periods for the Lower Yukon Area. During the commercial season subsistence fishing will only be allowed between commercial periods. Subsistence fishing will open 12 hours after the close of a commercial period and will terminate 18 hours before the start of the next scheduled commercial opening. Fishermen are reminded to fill out their subsistence catch calendars. If you would like to receive a subsistence catch calendar, contact the ADF&G office in Emmonak.

MANAGEMENT STRATEGY-UPPER YUKON AREA (DISTRICTS 4, 5, AND 6)

Commercial Fisheries

Commercial fishermen are prohibited from transferring between the three Upper Yukon Area districts. Fishermen can move freely between subdistricts within the registered district. Commercial fishermen are automatically registered in the district where they make their first delivery of the season.

Reporting salmon purchases in a timely manner is essential for the management of these fisheries. The Department of Fish and Game requires all processors and buyers of salmon to register with the Fairbanks office prior to purchasing salmon in the Upper Yukon Area (as authorized by 5AAC 39.130). Registered salmon buyers are required to provide a verbal report of their salmon purchases within 18 hours following the closure of a commercial fishing period. Buyers may leave verbal harvest reports by calling a 24-hour recording at 452-4387. Buyers are also required to mail or deliver fish tickets to the department within 36 hours following the closure of a commercial fishing period. If there is incomplete reporting, the department may delay commercial fishing until the needed harvest reports are received.

District 4

Prior to 1992, the District 4 commercial fishing season opened by regulation between June 15 and June 25. During the February 1992 Board of Fisheries meeting, a regulation was adopted which removed specific dates and allows the District 4 commercial fishing season to be opened by emergency order. Because of the below average summer chum salmon projection for the 1993 season, the department anticipates that the commercial salmon season in District 4 will probably open no earlier than Sunday, June 27. This strategy will allow distribution of the run throughout the district and reduce the harvest of earlier running spawning stocks.

The board also adopted a regulation to allow commercial fishing periods to be established by emergency order. Past regulations provided two 48-hour commercial and subsistence fishing periods per week in District 4, beginning at 6:00 p.m. Sunday and 6:00 p.m. Wednesday. It is anticipated that the commercial periods this season will continue to open at 6:00 p.m. Sunday and/or 6:00 p.m. Wednesday. Once the commercial season opens, depending upon run strength and targeted commercial harvest, Subdistrict 4-A is anticipated to have one or two 24-hour periods per week. Subdistricts 4-B and 4-C are anticipated to remain on two 48-hour periods per week. If subsistence fishermen are unable to meet their subsistence needs due to the commercial fishing schedule, additional subsistence only fishing time will be allowed.

Chinook and Summer Chum Salmon

The District 4 chinook salmon guideline harvest range is 2,250 to 2,850 fish. Based on preseason projections, the department will manage for the quarter-point to mid-point of the chinook salmon guideline harvest range. The early season in District 4 will close when the targeted chinook or summer chum salmon harvest is reached.

The Subdistrict 4-A summer chum salmon guideline harvest range is 113,000 to 338,000 fish, or the roe equivalent of 61,000 to 183,000 pounds. The Board of Fisheries has established a roe cap in Subdistrict 4-A of 183,000 pounds of roe. If Subdistrict 4-A salmon roe sales reach the cap during a fishing season, then only the sale of fish in the round will be allowed. Subdistricts 4-B and 4-C have a combined guideline harvest range of 16,000 to 47,000 summer chum salmon. Based on the preseason projection, the summer chum harvest is expected to be near the low end of the guideline harvest ranges (61,000 pounds of roe in Subdistrict 4-A and 16,000 fish in Subdistricts 4-B and 4-C combined).

Fall Chum and Coho Salmon

Current regulations do not allow a commercial late season for fall chum salmon in Subdistrict 4-A. The fall commercial fishing season in Subdistricts 4-B and 4-C will open by emergency order after August 1. With the 1993 projection for a poor fall chum salmon return, it is anticipated that Subdistricts 4-B and 4-C will harvest between 6,900 and 10,000 fall chum salmon.

District 5

The department will open and close the District 5 commercial salmon season by emergency order. The commercial salmon season will open once the chinook salmon run is distributed throughout the area. Assessment of run abundance and timing from downstream commercial fishing districts, along with subsistence catch reports, will provide information to determine the season opening. It is anticipated that fishing periods during the early season in Subdistricts 5-A, 5-B, and 5-C will initially be 36 or 24 hours in duration. Similar to recent years, the Subdistrict 5-A, 5-B, and 5-C late season commercial fishing periods will be 24 hours in duration.

For Subdistrict 5-D, the department will use emergency order authority to reduce the Subdistrict 5-D commercial fishing schedule to 36- or 24-hour periods. This will allow the department to monitor and maintain the harvest within the guideline harvest range.

Chinook and Summer Chum Salmon

Subdistricts 5-A, 5-B, and 5-C have a guideline harvest range of 2,400 to 2,800 chinook salmon. The Board of Fisheries also established a separate guideline harvest range of 300 to 500 chinook

salmon for Subdistrict 5-D. In addition, there is a District 5 guideline harvest range of 1,000 to 3,000 summer chum salmon. Based on the preseason projection, the department will be managing the harvest within the chinook salmon and to the lower end of the summer chum salmon guideline harvest ranges. In years with average returns and normal run timing, the first commercial fishing period in Subdistricts 5-A, 5-B, and 5-C should occur between June 25 and July 5.

In Subdistrict 5-D, the first commercial fishing period in years with average returns and normal run timing should occur between July 1 and July 10. The early season in Subdistrict 5-D will close once the harvest of chinook salmon is within the guideline harvest range.

Fall Chum and Coho Salmon

In years with average returns and normal run timing, the first late season commercial fishing period in subdistricts 5-A, 5-B, and 5-C should occur in mid-August. Based on a preseason projection of a poor fall chum salmon return, it is anticipated that the Subdistrict 5-A, 5-B, and 5-C late season fishery will harvest between 6,200 and 9,000 fall chum salmon.

In years with average returns and normal run timing, the first late season commercial fishing period in Subdistrict 5-D should occur in early September. It is anticipated that Subdistrict 5-D will harvest between 1,000 and 1,500 fall chum salmon.

District 6

In the spring of 1988, the Board of Fisheries held a special session in Fairbanks to discuss and evaluate the fishery management plan for the Tanana River. At this meeting, the Board of Fisheries instructed the department to continue to manage District 6 on the basis of guideline harvest ranges. However, the Board of Fisheries did sanction managing District 6 as a terminal fishery area. This allows the department to go to a different level within the guideline harvest ranges or, in some years, exceed the upper end of the guideline harvest level when it can be determined that additional commercial fishing will not jeopardize achieving escapement goals or meeting subsistence needs.

Currently, the Tanana River inseason run strength and timing indicators are limited. These include test fish wheel catches near the villages of Manley Hot Springs and Nenana, aerial surveys, and the performance of the commercial and subsistence fisheries. In addition, chinook salmon escapement information collected by Sport Fish Division through tagging or tower counting projects on the Chena and Salcha Rivers may be used for inseason run assessment. The test fisheries have provided valuable run timing and species composition information inseason. Additionally, the test fisheries have provided reliable catch rates that indicate whether the salmon run is building or dropping off in numbers. However, the test fisheries are less valuable in determining the magnitude of the run as compared to prior years due to inter-annual variability in fish wheel location and efficiency.

During the 1993 season, the Manley test fish wheel will operate during the entire season with a "live ." No sales of salmon are expected from the Manley test fish wheel. The Nenana test fish wheel ..l be operated only during the fall season on an every-other-day schedule. Aerial assessment of spawning escapement areas depends on favorable weather and water conditions. Due to the limited management tools available, the department will be conservative in the management of District 6. The department will not be allowing the harvests in District 6 to exceed the upper end of the Board of Fisheries established guideline harvest ranges during the 1993 season. Regulations adopted by the Board of Fisheries for the 1993 season does not allow District 6 to exceed the fall chum salmon guideline harvest range. This will be the department's management strategy until such a time when there are reliable run size indicators available for the Tanana River.

Chinook and Summer Chum Salmon

The opening of the District 6 chinook and summer chum salmon commercial fishing season will be by emergency order. Similar to recent years, the opening of the commercial fishing season will be delayed and all subdistricts will open at the same time. The purpose of delaying the season opening is to allow the early portion of the chinook salmon migration to pass through the fishery before commercial fishing begins for the later running summer chum salmon.

District 6 has a guideline harvest range of 600 to 800 chinook and 13,000 to 38,000 summer chum salmon. If the preseason projections are confirmed, the early season is expected to close once the id-point of the chinook salmon guideline harvest range is exceeded, or the lower end of the summer .um salmon guideline harvest range is taken.

During years of average run timing, the first commercial fishing period in District 6 would occur in mid-July. During the early season in District 6, and unless altered by emergency order, there will be two 42-hour commercial fishing periods per week, from 6:00 p.m. Friday until 12:00 noon Sunday, and from 6:00 p.m. Monday until 12:00 noon Wednesday. The department will close the early season no later than August 10.

Fall Chum and Coho Salmon

In most years, District 6 has opened by emergency order once the run is distributed throughout the district. Typically, in years of average return size and normal run timing, the first late season commercial fishing period would occur in early to mid-September. Regulations provide for no more than one 42-hour period in Subdistricts 6-B and 6-C, and no more than one 24-hour period in Subdistrict 6-A per week during the late season.

Under the Toklat River Fall Chum Salmon Rebuilding Management Plan, District 6 will close when the harvest is within the guideline harvest range for 1993 of 3,800 to 5,500 fish. Following the District 6 closure, depending on inseason run strength indicators, the upper Tanana River Subdistricts 6-B and 6-C above the Kantishna River maybe reopened to allow a higher harvest within the 2,250

to 20,500 fall chum salmon guideline harvest range for District 6 (Table 1). The Delta River drainage parent-year escapement goal was achieved for the four-year-old fish returning in 1993. However, there is concern for the strength of the age-5 fall chum salmon return for all stocks in 1993, as the return of age-4 fish in 1992 was poor.

The coho salmon return is projected to be average. The migratory timing of coho salmon is somewhat later, but does overlap with the fall chum salmon run. The commercial harvest of coho salmon is a function of the timing, frequency, and duration of the periods established for the more numerous fall chum salmon. Fall chum salmon will continue to be the primary species of management concern. Based on a YRDFA recommendation and that the department manages the fall season based on the strength of the fall chum salmon return, the Board of Fisheries has removed coho salmon from the Upper Yukon Area guideline harvest range. The removal of coho salmon from the guideline harvest ranges will not affect the timing or duration of periods during the fall season in 1993.

Subsistence Fishery

Fishermen are reminded to keep track of their subsistence fish on their subsistence catch calendar or fishing permit. If you do not receive a calendar in the mail and would like to receive one, contact the Fairbanks office.

District 4

Subsistence salmon fishing is allowed seven days per week before the opening of the District 4 commercial season. Subsistence salmon fishing is prohibited 24 hours before the opening and 24 hours after the closure of the commercial salmon season. Beginning 24 hours after the closure of the commercial salmon season, subsistence fishermen may take salmon seven days per week.

Once the District 4 commercial salmon season opens, managers will attempt to have the subsistence fishing schedule coincide with allowable commercial periods. During the commercial salmon season in District 4, it is anticipated that commercial fishing periods will begin at 6:00 p.m. Sunday and/or at 6:00 p.m. Wednesday. Subsistence fishing time in Subdistrict 4-A is anticipated to be a minimum of two 24-hour periods per week, with additional drift fishing time allowed upstream of Stink Creek. Subsistence fishing time in Subdistricts 4-B and 4-C is anticipated to continue as two 48-hour periods per week, unless altered by emergency order. Additionally, for any commercial salmon fishing closures of greater than five days in duration during the commercial salmon season, subsistence fishermen may take salmon from 6:00 p.m. Sunday until 6:00 p.m. Friday.

District 5

District 5 subsistence fishermen may take salmon seven days per week before the opening of the commercial salmon season. Subsistence fishermen may not take salmon 24 hours before the opening and 24 hours after the closure of the commercial salmon season. Once the commercial fishing season opens in Subdistricts 5-A, 5-B, and 5-C, an attempt will be made to have subsistence fishing periods coincide with the commercial fishing schedule.

For any commercial salmon fishing closures of greater than five days in duration during the commercial salmon season and following the closure of the commercial season in Subdistricts 5-A, 5-B, and 5-C, subsistence fishermen may take salmon from 6:00 p.m. Tuesday until 6:00 p.m. Sunday. In Subdistrict 5-D, subsistence fishermen may take salmon seven days per week throughout the season.

In portions of District 5, regulation requires subsistence fishermen to obtain subsistence salmon fishing permits. Permit areas include the Yukon River bridge area from Hess Creek to the Dall River and the Yukon River drainage upstream of Fort Yukon to the Canadian border. Permits can be obtained from the Department of Fish and Game office in Fairbanks. Regulations require all permit holders to report harvest information at the end of the fishing season.

'strict 6

Regulations require salmon fishermen in that portion of the Tanana River drainage not included in the Non-Subsistence Area (Figure 2) to obtain subsistence permits. Permits can be obtained from the Department of Fish and Game office in Fairbanks. Subsistence permit holders fishing in the upper portion of Subdistrict 6-B are required to report the number of salmon taken to the department each week. Permit holders can report their catch by record-a-phone at 452-7466. All other Tanana River subsistence permit holders are required to report harvest information at the end of the fishing season by returning their expired permit to the Department of Fish and Game office in Fairbanks. District 6 subsistence fishermen may take salmon from 6:00 p.m. Monday until 12:00 noon Wednesday, and from 6:00 p.m. Friday until 12:00 noon Sunday, unless altered by emergency order.

Personal Use Fishery

Regulations adopted by the Board of Fisheries in February 1993 require salmon fishermen in that portion of the Tanana River drainage included in the Fairbanks Non-Subsistence Area (Figure 2) to obtain a personal use permit. Personal use permit holders are required to report to the department the number of salmon taken each week by calling 452-7466. Additionally, in the subdistrict adjacent to the Fairbanks area, Subdistrict 6-C, there is a fishery harvest limit. The personal use fishery harvest limit in Subdistrict 6-C is 750 chinook salmon, 5,000 summer chum salmon, and 5,200 fall chum and coho salmon combined. If this harvest limit is reached, the personal use fishery in Subdistrict 6-C will be closed.

Sport Fisheries

In general, sport fish salmon harvests in the Yukon Area are relatively minor compared to commercial and subsistence harvests. The Tanana River drainage is the exception, as it supports a popular sport fishery. In 1988, the Board of Fisheries established a guideline harvest range of 300-700 chinook salmon for the Salcha River recreational fishery. In 1990, the Board established a guideline harvest range of 300-600 chinook salmon for the Chena River recreational fishery.

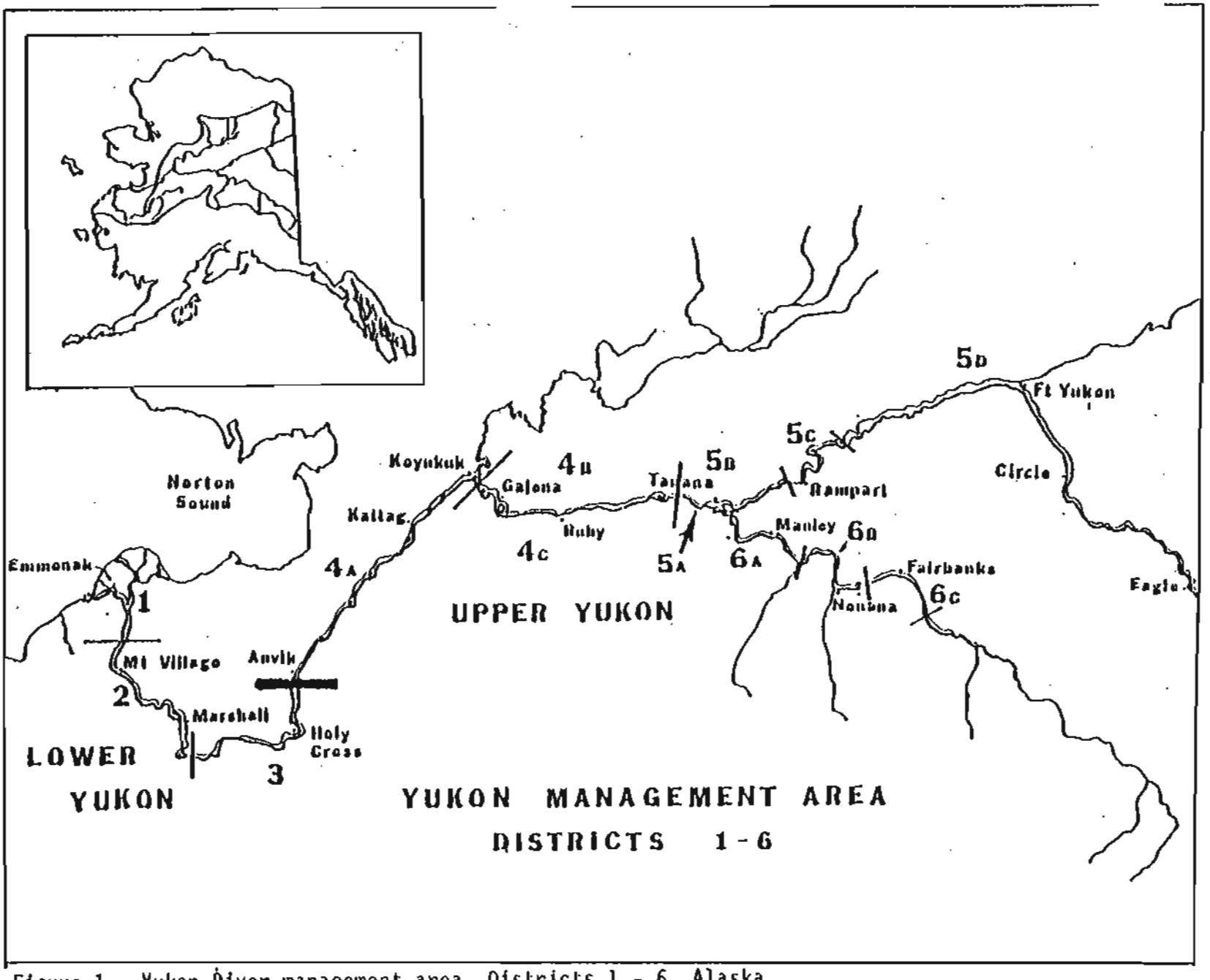

Figure 1. Yukon River management area, Districts 1 - 6, Alaska.

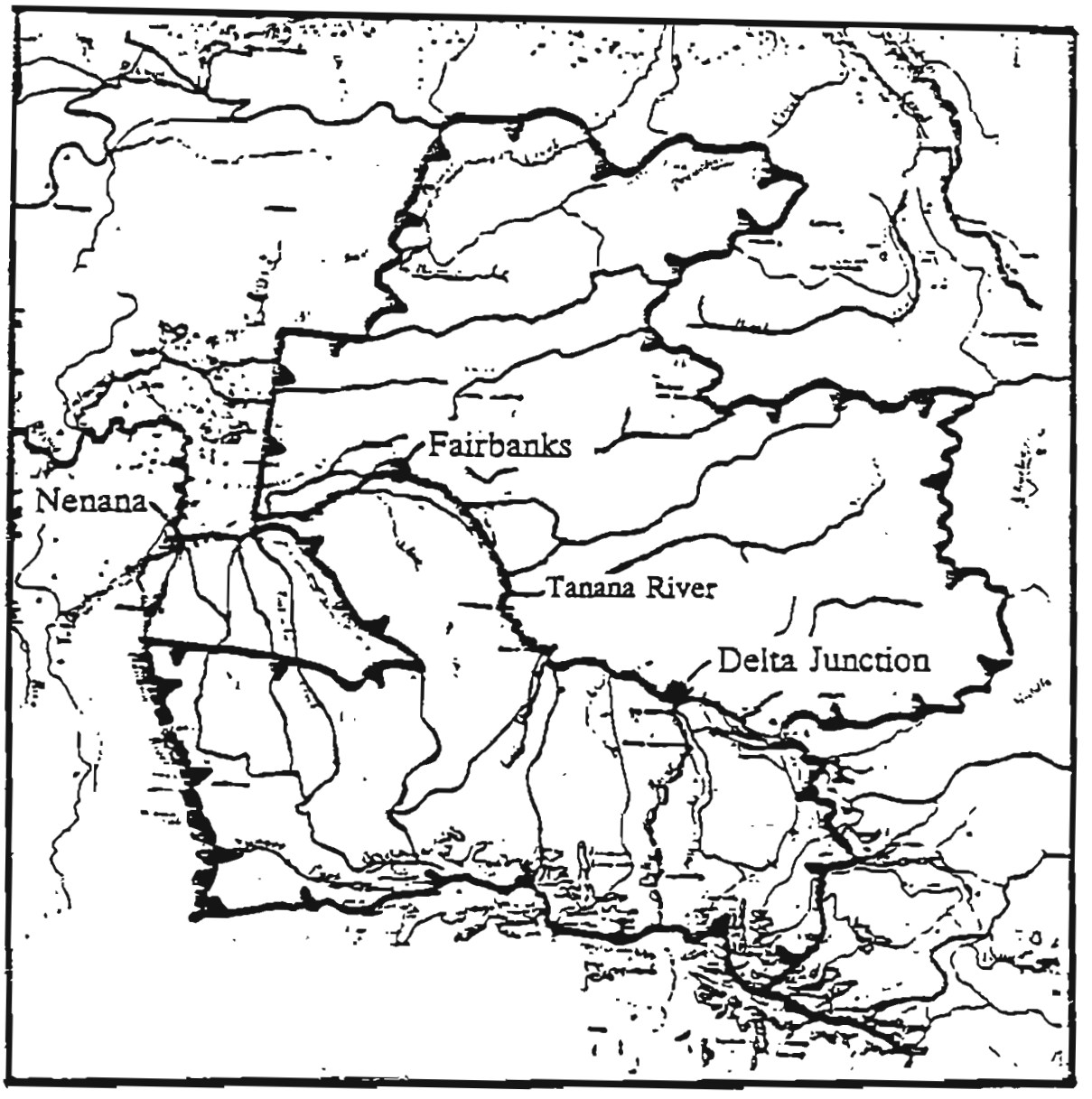

Figure 2. Fairbanks Non-Subsistence Area, 1992.

Table 1. Guideline harvest ranges and mid-points for Alaskan and Canadian commercial harvests of Yukon River chinook, summer chum, and fall chum salmon.

Chinook Salmon

Alaskan Management District or Country	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	60,000	78.5	90,000	82.7	120,000	85.0
3	1,800	2.4	2,000	1.8	2,200	1.6
4	2,250	2.9	2,550	2.3	2,850	2.0
5A,B,C	2,400	3.1	2,600	2.4	2,800	2.0
5D	300	0.4	400	0.4	500	0.4
6	600	0.8	700	0.6	800	0.6
YT, Canada[a]	9,100	11.9	10,600	9.7	12,100	8.6
Total	76,450	100.0	108,850	100.0	141,250	100.0

Summer Chum Salmon

Alaskan Management District	Guideline Harvest Range					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1 and 2	251,000	62.8	503,000	62.9	755,000	62.9
3	6,000	1.5	12,500	1.6	19,000	1.6
4A[b]	113,000	28.3	225,500	28.2	338,000	28.2
4B,C	16,000	4.0	31,500	3.9	47,000	3.9
5	1,000	0.3	2,000	0.3	3000	0.3
6	13,000	3.3	25,500	3.2	38,000	3.2
Total	400,000	100.0	800,000	100.0	1,200,000	100.0

Fall Chum Salmon

Alaskan Management District or Country	Guideline Harvest Range[c]					
	Lower		Mid-Point		Upper	
	Numbers	Percent	Numbers	Percent	Numbers	Percent
1, 2, and 3	60,000	64.1	140,000	63.1	220,000	62.8
4B,C	5,000	5.3	22,500	10.1	40,000	11.4
5A,B,C	4,000	4.3	20,000	9.0	36000	10.3
5D	1000	1.1	2,500	1.1	4000	1.1
6	2,750	2.9	11,625	5.2	20,500	5.9
YT, Canada[a]	20,900	22.3	25,400	11.4	29,900	8.5
Total	93,650	100.0	222,025	100.0	350,400	100.0

[a] Includes only the mainstem Yukon River fisheries in Canada. Varies annually dependent on Indian Food fishery demand. Overall guideline harvest range for all Canadian fisheries are 16,800 to 19,800 for chinook salmon and 23,600 to 32,600 for fall chum salmon.

[b] Or the equivalent roe poundage of 61,000 to 183,000 pounds or some combination of fish and pounds of roe.

[c] The fall chum guideline harvest range was changed for only the 1993 season by the BOF.

Table 2. Commercial chinook salmon sales and harvest by district, Yukon River drainage in Alaska, 1961–1992. a,b

	Lower Yukon Area				Upper Yukon Area										
					Dist. 4			Dist. 5			Dist. 6			Subtotal	
							Estimated			Estimated			Estimated	Estimated	Alaska
Year	Dist. 1	Dist. 2	Dist. 3	Subtotal	Numbers	Roe	Harvest c	Numbers	Roe	Harvest c	Numbers	Roe	Harvest c	Harvest	Total
1961	84,466	29,026	4,368	117,860	–	–	–	–	–	–	–	–	–	1,804	119,664
1962	67,099	22,224	4,687	94,010	–	–	–	–	–	–	–	–	–	724	94,734
1963	85,004	24,221	7,020	116,245	–	–	–	–	–	–	–	–	–	803	117,048
1964	67,555	20,246	4,705	92,506	–	–	–	–	–	–	–	–	–	1,081	93,587
1965	89,266	23,763	3,204	116,235	–	–	–	–	–	–	–	–	–	1,863	118,098
1966	70,788	16,927	3,612	91,327	–	–	–	–	–	–	–	–	–	1,988	93,315
1967	104,350	20,239	3,618	128,207	–	–	–	–	–	–	–	–	–	1,449	129,656
1968	79,465	21,392	4,543	105,400	–	–	–	–	–	–	–	–	–	1,126	106,526
1969	71,688	14,756	3,595	90,039	–	–	–	–	–	–	–	–	–	988	91,027
1970	58,648	17,141	3,705	77,494	–	–	–	–	–	–	–	–	–	1,651	79,145
1971	88,042	19,226	3,490	108,758	–	–	–	–	–	–	–	–	–	1,749	110,507
1972	70,052	17,855	3,841	91,748	–	–	–	–	–	–	–	–	–	1,092	92,840
1973	56,981	13,859	3,204	74,044	–	–	–	–	–	–	–	–	–	1,309	75,353
1974	71,840	17,948	3,480	93,268	685	–	685	2,663	–	2,663	1,473	–	1,473	4,821	98,089
1975	44,585	11,315	4,177	60,077	389	–	389	2,872	–	2,872	500	–	500	3,761	63,838
1976	62,410	16,556	4,148	83,114	409	–	409	3,151	–	3,151	1,102	–	1,102	4,662	87,776
1977	69,915	16,722	3,965	90,602	985	–	985	4,162	–	4,162	1,008	–	1,008	6,155	96,757
1978	59,006	32,924	2,916	94,846	608	–	608	3,079	–	3,079	635	–	635	4,322	99,168
1979	75,007	41,498	5,018	121,523	1,989	–	1,989	3,389	–	3,389	772	–	772	6,150	127,673
1980	90,362	50,004	5,240	145,626	1,521	–	1,521	4,891	–	4,891	1,947	–	1,947	8,359	153,985
1981	99,506	45,781	4,023	149,310	1,347	–	1,347	6,374	–	6,374	987	–	987	8,708	158,018
1982	74,450	39,132	2,609	116,191	1,087	–	1,087	5,386	–	5,386	981	–	981	7,453	123,644
1983	95,457	43,229	4,106	142,792	601	–	601	3,606	–	3,606	911	–	911	5,118	147,910
1984	74,671	36,697	3,039	114,407	981	–	981	3,669	–	3,669	867	–	867	5,497	119,904
1985	90,011	48,365	2,588	140,964	664	–	664	3,418	–	3,418	1,142	–	1,142	5,224	146,188
1986	53,035	41,849	901	95,785	502	–	502	2,733	–	2,733	950	–	950	4,185	99,970
1987	76,643	47,458	2,039	126,140	1,524	–	1,524	3,758 d	–	3,758	3,338 e	–	3,338	8,620	134,760
1988	57,109	35,188	1,767	94,064	3,159	–	3,159	3,436	–	3,436	762	–	762	7,357	101,421
1989	59,153	33,225	1,645	94,023	2,790	–	2,790	3,286	–	3,286	1,741	–	1,741	7,817	101,840
1990	51,161	33,213	2,341	86,715	3,536	8	3,538	3,353	47	3,365	1,757	1,676	2,156	9,059	95,774
1991	56,332 f	39,260 f	2,344	97,936	2,446	2,222	3,582	3,810	62	3,826	686	1,545	1,072	8,480	106,416
1992	74,212 g	38,139 g	1,819	114,170	1,651	2,273	2,394	3,852	7	3,855	572	884	752	7,001	121,171
5 Yr Avg 1982–86	77,525	41,854	2,649	122,028	763	–	763	3,762	–	3,762	970	–	970	5,495	127,523
5 Yr Avg 1987–91	60,080	37,669	2,027	99,776	2,691	–	2,919	3,529	–	3,534	1,657	–	1,814	8,267	108,042

a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe.
b Includes department test fish sales in the Lower Yukon Area prior to 1991.
c The estimated harvest is the number of fish sold in the round plus the estimated number of females to produce the roe sold.
d Includes illegal sales of 653 chinook salmon.
e Includes illegal sales of 2,136 chinook salmon.
f Includes unlawful purchases of 2,711 chinook salmon in District 1 and 284 chinook salmon in District 2.
g Includes unlawful purchases of 1,218 chinook salmon in District 1 and 207 chinook salmon in District 2.

Table 3. Commercial summer chum salmon sales and harvest by district, Yukon River drainage in Alaska, 1967–1992. a

	Lower Yukon Area b				Upper Yukon Area										
					District 4			District 5			District 6				
Year	Dist. 1	Dist. 2	Dist. 3	Subtotal	Numbers	Roe	Estimated Harvest c	Numbers	Roe	Estimated Harvest d	Numbers	Roe	Estimated Harvest d	Subtotal Estimated Harvest	Alaska Total Harvest
1967	9,453	1,425	57	10,935	–	–	–	–	–	–	–	–	–	0	10,935
1968	12,995	1,407	68	14,470	–	–	–	–	–	–	–	–	–	0	14,470
1969	56,866	5,080	0	61,966	–	–	–	–	–	–	–	–	–	0	61,966
1970	117,357	19,649	0	137,006	–	–	–	–	–	–	–	–	–	0	137,006
1971	93,928	6,112	50	100,090	–	–	–	–	–	–	–	–	–	0	100,090
1972	114,234	20,907	527	135,668	–	–	–	–	–	–	–	–	–	0	135,668
1973	221,644	63,402	463	285,509	–	–	–	–	–	–	–	–	–	0	285,509
1974	466,004	74,152	1,721	541,877	27,866	–	27,866	6,831	–	6,831	13,318	–	13,318	48,015	589,892
1975	418,323	99,139	0	517,462	165,054	–	165,054	12,997	–	12,997	14,782	–	14,782	192,833	710,295
1976	273,204	99,190	9,802	382,196	211,307	–	211,307	774	–	774	6,617	–	6,617	218,698	600,894
1977	250,652	105,679	3,412	359,743	169,541	–	169,541	1,274	–	1,274	4,317	–	4,317	175,132	534,875
1978	393,785	227,548	27,003	648,336	364,184	16,920	381,104	4,892	605	5,497	34,814	8,236	43,050	429,651	1,077,987
1979	369,934	172,838	40,015	582,787	169,430	35,317	204,747	8,608	1,009	9,617	18,491	3,891	22,382	236,746	819,533
1980	391,252	308,704	44,782	744,738	147,560	135,824	283,384	456	0	456	35,855	3,282	39,137	322,977	1,067,715
1981	507,158	351,878	54,471	913,507	59,718	187,032	330,445	1,230	48	1,285	32,477	1,987	34,464	366,194	1,279,701
1982	249,516	182,344	4,086	435,946	3,647	161,261	257,719	213	21	234	21,597	1,517	23,114	281,067	717,013
1983	451,184	248,092	14,600	713,856	6,672	148,125	255,388	42	1,856	1,898	24,309	18	24,327	281,613	995,469
1984	292,676	236,931	1,087	530,694	1,009	166,842	278,070	645	47	692	56,249	335	56,584	335,346	866,040
1985	247,486	188,099	1,792	437,377	12,007	247,085	427,483	700	0	700	66,913	1,540	68,453	496,636	934,013
1986	381,127	288,427	442	669,996	300	269,545	465,535	690	0	690	50,403	2,146	52,629	518,854	1,188,850
1987	222,898	174,876	3,501	401,275	29,991	121,474	209,800	362	44	406	10,610	450	11,060	221,266	622,541
1988	648,198	425,172	13,966	1,087,335	24,051	254,526	490,074	722	363	1,085	40,129	1,646	41,775	532,934	1,620,269
1989	547,631	343,962	7,578	899,171	18,554	263,305	510,244	154	373	527	42,115	4,871	46,986	557,757	1,456,928
1990	146,911	132,507	643	282,061	12,364	105,723	218,029	11	594	671	11,082 g	3,059	14,708	233,466	515,549
1991	140,470 e	175,149	8,912	324,531	6,301	137,232	306,550	4	29	35	18,197	4,716	23,893	330,478	655,009
1992	177,329 f	147,129 f	65	324,523	2,659	110,009	205,034	102	295	430	5,029	1,892	7,220	212,692	537,215
5 Yr Avg 1982–86	324,394	220,778	4,401	557,574	4,727	196,576	336,639	456	385	843	43,910	1,111	45,021	382,703	940,277
5 Yr Avg 1987–91	341,622	250,333	6,920	598,875	18,269	100,452	346,039	251	280	545	24,427	2,948	27,700	375,185	974,059

a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe (may include small amounts of chinook salmon roe).
b Includes department test fish sales in the Lower Yukon Area prior to 1991.
c Estimated harvest is the estimated number of males and females harvested to produce the roe sold. It is assumed that summer chum salmon sold in the round were primarily male salmon that are estimated in roe expansion.
d Estimated harvest is the number of fish sold in the round plus the estimated number of females to produce roe sold.
e Includes unlawful purchases of 1,023 summer chum salmon in District 1.
f Includes unlawful purchases of 31 chum salmon in District 1 and 91 chum salmon in District 2.
g Includes 1,278 female summer chum salmon sold with roe extracted and sold separately. The estimated harvest of females to produce roe sold is decreased by a similar amount.

Table 4. Commercial fall chum salmon sales by district, Yukon River drainage in Alaska, 1961–1992. a

Year	Lower Yukon Area b				Upper Yukon Area											
					District 4			District 5			District 6			Subtotal		Alaska
	Dist. 1	Dist. 2	Dist. 3	Subtotal	Numbers	Roe c	Estimated Harvest d	Numbers	Roe c	Estimated Harvest d	Numbers	Roe c	Estimated Harvest d	Roe c	Estimated Harvest d	Total Harvest
1961	42,461	–	–	42,461	–	–	–	–	–	–	–	–	–	0	0	42,461
1962	53,116	–	–	53,116	–	–	–	–	–	–	–	–	–	0	0	53,116
1963	–	–	–	0	–	–	–	–	–	–	–	–	–	0	0	0
1964	8,347	–	–	8,347	–	–	–	–	–	–	–	–	–	0	0	8,347
1965	22,936	–	–	22,936	–	–	–	–	–	–	–	–	–	0	381	23,317
1966	69,836	–	1,209	71,045	–	–	–	–	–	–	–	–	–	0	0	71,045
1967	36,451	–	1,823	38,274	–	–	–	–	–	–	–	–	–	0	0	38,274
1968	49,857	–	3,068	52,925	–	–	–	–	–	–	–	–	–	0	0	52,925
1969	128,866	–	1,722	130,588	–	–	–	–	–	–	–	–	–	0	722	131,310
1970	200,306	4,858	3,285	208,449	–	–	–	–	–	–	–	–	–	0	1,146	209,595
1971	188,533	–	–	188,533	–	–	–	–	–	–	–	–	–	0	1,061	189,594
1972	136,711	12,698	1,313	150,922	–	–	–	–	–	–	–	–	–	0	1,254	152,176
1973	173,783	45,304	–	219,087	–	–	–	–	–	–	–	–	–	0	13,003	232,090
1974	176,036	53,540	552	230,128	9,213	–	9,213	23,551	–	23,551	26,884	–	26,884	0	59,648	289,776
1975	158,183	51,666	5,590	215,439	13,666	–	13,666	27,212	–	27,212	18,692	–	18,692	0	59,570	275,009
1976	105,851	21,212	4,250	131,313	1,742	–	1,742	5,387	–	5,387	17,948	–	17,948	0	25,077	156,390
1977	131,756	51,994	15,851	199,603	13,980	–	13,980	25,730	–	25,730	18,673	–	18,673	0	58,383	257,986
1978	127,947	51,646	11,527	191,120	10,988	1,721	12,709	21,016	5,220	26,236	13,259	3,687	16,946	10,628	55,891	247,011
1979	109,406	94,042	25,955	229,403	48,899	3,199	52,098	47,459	8,097	55,556	34,185	7,170	41,355	18,466	149,009	378,412
1980	106,829	83,861	13,519	204,229	27,978	4,347	32,325	41,771	605	42,376	19,452	68	19,520	5,020	94,221	298,450
1981	167,834	154,883	19,043	341,760	12,082	1,311	13,393	86,620	6,955	93,575	25,989	3,019	29,008	11,285	135,976	477,736
1982	97,484	98,581	5,815	199,880	3,894	167	4,061	13,593	42	13,635	6,820	596	7,416	805	25,112	224,992
1983	124,371	85,645	10,018	220,034	4,482	1,063	6,445	43,993	0	43,993	34,089	3,101	37,190	5,034	87,628	307,662
1984	78,751	70,803	6,429	155,983	7,625	2,215	9,840	24,060	57	24,117	20,564	56	20,620	2,328	54,577	210,560
1985	129,048	40,400	5,164	175,002	24,452	2,525	26,977	25,338	0	25,338	42,352	0	42,352	2,525	94,667	270,269
1986	59,352	51,307	2,793	113,452	2,045	0	2,045	22,053	395	22,448	1,892	182	2,074	577	26,567	140,019
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	45,529	31,961	2,090	79,480	15,662	1,421	17,083	16,989	0	16,989	21,844	1,806	23,650	3,227	57,722	137,202
1989	77,876	97,906	15,332	191,114	11,776	3,407	15,183	18,215	3,989	22,204	49,090	7,353	56,443	14,749	93,830	284,944
1990	27,337	37,173	3,715	68,225	4,989	2,351	8,166	7,778	1,058	8,976	44,066 e	7,535	50,974	10,944	60,116	136,341
1991	59,724	102,628	9,213	171,565	3,737	1,616	6,091	27,355	3,625	32,114	28,195	14,154	44,448	19,395	82,653	254,218
1992	0	0	0	0	0	0	0	0	0	0	15,721	2,806	19,022	2,806	19,022	19,022
5 Yr Ave 1982–86	97,981	68,985	6,014	172,990	8,500	1,374	9,874	25,807	99	25,906	21,143	787	21,930	2,260	57,710	230,700
5 Yr Ave 1987–91	42,093	53,014	6,070	102,077	7,233	1,759	9,305	14,067	1,734	16,057	28,630	6,170	35,103	9,663	60,464	162,541

a Sales reported in numbers of fish sold in the round and pounds of unprocessed roe.
b Includes department test fish sales in the Lower Yukon Area prior to 1991.
c May include small amounts of coho salmon roe.
d Estimated harvest is the number of fish sold in the round plus the estimated number of females to produce roe sold.
e Includes 884 female fall chum salmon sold with roe extracted and sold separately.

Table 5. Commercial coho salmon sales and harvest by district, Yukon River drainage in Alaska, 1961–1992. a

	Lower Yukon Area b				Upper Yukon Area						
							Dist. 6				
Year	Dist. 1	Dist. 2	Dist. 3	Subtotal	Dist. 4	Dist. 5	Number	Roe	Estimated Harvest c	Subtotal	Total Harvest
1961	2,855	–	–	2,855	–	–	–	–	–	0	2,855
1962	22,926	–	–	22,926	–	–	–	–	–	0	22,926
1963	5,572	–	–	5,572	–	–	–	–	–	0	5,572
1964	2,446	–	–	2,446	–	–	–	–	–	0	2,446
1965	350	–	–	350	–	–	–	–	–	0	350
1966	19,254	–	–	19,254	–	–	–	–	–	0	19,254
1967	9,925	0	1,122	11,047	–	–	–	–	–	0	11,047
1968	13,153	0	150	13,303	–	–	–	–	–	0	13,303
1969	13,989	0	1,009	14,998	–	–	–	–	–	95	15,093
1970	12,632	0	0	12,632	–	–	–	–	–	556	13,188
1971	12,165	0	0	12,165	–	–	–	–	–	38	12,203
1972	21,705	506	0	22,211	–	–	–	–	–	22	22,233
1973	34,860	1,781	0	36,641	–	–	–	–	–	0	36,641
1974	13,713	176	0	13,889	0	1,409	1,479	–	1,479	2,888	16,777
1975	2,288	200	0	2,488	0	5	53	–	53	58	2,546
1976	4,064	17	0	4,081	0	0	1,103	–	1,103	1,103	5,184
1977	31,720	5,319	538	37,577	0	2	1,284	–	1,284	1,286	38,863
1978	16,460	5,835	758	23,053	32	1	3,066	–	3,066	3,099	26,152
1979	11,369	2,850	0	14,219	155	0	2,791	–	2,791	2,946	17,165
1980	4,829	2,660	0	7,489	30	0	1,226	–	1,226	1,256	8,745
1981	13,129	7,848	419	21,396	0	0	2,284	–	2,284	2,284	23,680
1982	15,115	14,179	87	29,381	15	0	7,780	–	7,780	7,795	37,176
1983	4,595	2,557	0	7,152	0	0	6,168	–	6,168	6,168	13,320
1984	29,472	43,064	621	73,157	1,095	0	7,688	–	7,888	8,783	81,940
1985	27,678	17,125	171	44,972	938	0	11,762	–	11,762	12,700	57,672
1986	24,824	21,197	793	46,814	0	0	441	–	441	441	47,255
1987	0	0	0	0	0	0	0	–	0	0	0
1988	36,435	34,776	1,419	72,630	2	8	13,972	–	13,972	13,982	86,612
1989	24,672	38,522	3,988	67,182	3	84	16,084	–	16,084	16,171	83,353
1990	13,354	16,435	918	30,707	0	0	11,987 d	4,042	14,804	11,987	42,694
1991	54,096	40,898	1,905	96,898	14	0	6,268	4,299	9,774	6,282	103,180
1992	0	0	0	0	0	0	6,556	1,680	7,979	7,979	7,979
5 Yr Ave 1982–86	20,336	19,624	334	40,295	410	0	8,768	–	8,768	7,177	47,473
5 Yr Ave 1987–91	25,711	26,126	1,848	53,483	4	18	9,662	–	10,927	9,684	63,188

a Sales reported in numbers of fish sold in the round and pounds of roe. Coho salmon roe sales not separated from fall chum salmon until 1990.

b Includes department test fish sales prior to 1991.

c Estimated harvest is the number of fish sold in the round plus the estimated number of females to produce the roe sold.

d Includes 438 female coho salmon sold with roe extracted and sold separately.

Table 6. Alaskan subsistence and personal use catch of Yukon River drainage salmon, 1961–1992.

Year	Chinook [b,e]	Summer Chum [a,b,e]	Fall Chum [b,e]	Coho [b,e]	Total
1961	21,488	305,317	101,772	9,192	437,769
1962	11,110	261,856	87,285	9,480	369,731
1963	24,882	297,094	99,031	27,699	448,686
1964	16,231	361,080	120,360	12,187	509,858
1965	16,608	336,848	112,283	11,789	477,528
1966	11,572	154,508	51,503	13,192	230,775
1967	16,448	206,233	68,744	17,164	308,589
1968	12,106	133,880	44,627	11,613	202,226
1969	14,000	156,191	52,063	7,776	230,030
1970	13,874	166,504	55,501	3,966	239,845
1971	25,684	171,487	57,162	16,912	271,245
1972	20,258	108,006	36,002	7,532	171,798
1973	24,317	161,012	53,670	10,236	249,235
1974	19,964	227,811	93,776	11,646	353,197
1975	13,045	211,888	86,591	20,708	332,232
1976	17,806	186,872	72,327	5,241	282,246
1977	17,581	159,502	82,771	16,333	276,187
1978	30,297	197,144	94,867	7,787	330,095
1979	31,005	196,187	233,347	9,794	470,333
1980	42,724	272,398	172,657	20,158	507,937
1981	29,690	208,284	188,525	21,228	447,727
1982	28,158	260,969	132,897	35,894	457,918
1983	49,478	240,386	192,928	23,895	506,687
1984	42,428	230,747	174,823	49,020	497,018
1985	39,771	264,828	206,472	32,264	543,335
1986	45,238	290,825	164,043	34,468	534,574
1987	53,124	275,914	361,663 [d]	84,894 [d]	775,595
1988	46,559	311,724	159,703	69,138	587,124
1989	51,280	249,582	216,693	41,510	559,065
1990	52,113	118,471	182,033	47,816	400,433
1991	47,225	118,540	139,576	35,822	341,163
1992 [f]	45,954	141,094	102,625	49,166	338,839
5 Yr Avg 1987–91 Alaska	50,060	214,846	188,768 [g]	48,578 [h]	532,676
5 Yr Avg 1987–91 Lower Yukon	17,628	69,638	18,077	10,970	116,311
5 Yr Avg 1987–91 Upper Yukon	32,432	145,210	170,690 [g]	37,608 [h]	416,365

[a] Reported harvest of summer chum salmon includes fish harvested to produce commercial roe sales during some years.
[b] Catches estimated for 1961–1976 since catches of salmon other than chinook salmon were not differentiated by species until 1977.
[c] Minimum estimates for 1961–1978 because surveys were typically conducted well before the end of the fishing season.
[d] Includes estimates of catches (115,829 fall chum) from illegal salmon and salmon roe sales in District 5 and 6.
[e] Includes estimates of catches (36,291 coho) from illegal salmon and salmon roe sales in District 5 and 6.
[f] 1992 data is preliminary.
[g] Does not include estimate of illegal sales (115,829 fish) in five year (1987–1991) average.
[h] Does not inc1992 data from draft 1992 AMR and 1991 AMR

Table 7. Canadian catch of Yukon River drainage chinook and fall chum salmon, 1961–1992. [a]

Year	Chinook			Fall Chum		
	Commercial	Non–Commercial [b,c]	Total	Commercial	Non–Commercial [b]	Total
1961	3,446	9,800	13,246	3,276	5,800	9,076
1962	4,037	9,900	13,937	936	8,500	9,436
1963	2,283	7,794	10,077	2,196	25,500	27,696
1964	3,208	4,200	7,408	1,929	10,258	12,187
1965	2,265	3,115	5,380	2,071	9,718	11,789
1966	1,942	2,510	4,452	3,157	10,035	13,192
1967	2,187	2,963	5,150	3,343	13,618	16,961
1968	2,212	2,830	5,042	453	11,180	11,633
1969	1,640	984	2,624	2,279	5,497	7,776
1970	2,611	2,052	4,663	2,479	1,232	3,711
1971	3,178	3,269	6,447	1,761	15,150	16,911
1972	1,769	3,960	5,729	2,532	5,000	7,532
1973	2,199	2,323	4,522	2,806	7,329	10,135
1974	1,808	3,823	5,631	2,544	9,102	11,646
1975	3,000	3,000	6,000	2,500	18,100	20,600
1976	3,500	1,525	5,025	1,000	4,200	5,200
1977	4,720	2,807	7,527	3,990	8,489	12,479
1978	2,975	2,906	5,881	3,356	6,210	9,566
1979	6,175	4,200	10,375	9,084	13,000	22,084
1980	9,500	13,346	22,846	9,000	13,218	22,218
1981	8,593	9,516	18,109	15,260	7,021	22,281
1982	8,640	8,568	17,208	11,312	4,779	16,091
1983	13,027	5,925	18,952	25,990	3,500	29,490
1984	9,885	6,910	16,795	22,932	6,335	29,267
1985	12,573	6,728	19,301	35,746	5,519	41,265
1986	10,797	9,567	20,364	11,464	3,029	14,493
1987	10,864	6,800	17,664	40,591	3,889	44,480
1988	13,217	8,210	21,427	30,263	3,302	33,565
1989	9,789	8,155	17,944	17,549	5,471	23,020
1990	11,324	7,914	19,238	27,537	6,085	33,622
1991	10,906	9,701	20,607	31,404	4,014	35,418
1992 [d]	10,877	8,297	19,174	18,576	4,606	23,182
5 Yr Avg 1987–91	11,220	8,156	19,376	29,469	4,552	34,021

[a] Catch in numbers of fish.
[b] Indian Food Fish, Domestic, and Sport fisheries combined.
[c] Sport fish harvest unknown prior to 1980.
[d] 1992 data is preliminary.

Table 8. Chinook salmon escapement counts for selected spawning areas in the Alaskan portion of the Yukon River drainage, 1961–1992.[a]

Year	Andreafsky River		Anvik River[b]		Nulato River			Chena River			Salcha River		
	East Fork	West Fork	River	Index Area	North Fork[c]	South Fork	Gisasa River	Population Estimate	River	Index Area[d]	Population Estimate	River	Index Area[e]
1961	1,003	–	1,226	–	376[f]	167	266[f]	–	–	–	–	2,878	–
1962	675[f]	762[f]	–	–	–	–	–	–	81[f,g]	–	–	937	–
1963	–	–	–	–	–	–	–	–	137[f]	–	–	–	–
1964	867	705	–	–	–	–	–	–	–	–	–	450	–
1965	–	344[f]	650[f]	–	–	–	–	–	–	–	–	408	–
1966	361	303	838	–	–	–	–	–	–	–	–	800	–
1967	–	276[f]	336[f]	–	–	–	–	–	–	–	–	–	–
1968	360	383	310[f]	–	–	–	–	–	–	–	–	739	–
1969	274[f]	231[f]	296[f]	–	–	–	–	–	–	–	–	461[f]	–
1970	665	574[f]	368	–	–	–	–	–	6[f]	–	–	1,882	–
1971	1,904	1,682	–	–	–	–	–	–	193[f,g]	–	–	158[f]	–
1972	798	582[f]	1,198	–	–	–	–	–	138[f,g]	–	–	1,193	1,034
1973	825	788	613	–	–	–	–	–	21[f]	–	–	391	352[h]
1974	–	285	471[f]	–	55[f]	23[f]	181	–	1,018[f]	959[i]	–	1,857	1,820
1975	993	301	730	–	123	81	385	–	316[f]	262[i]	–	1,055	950[h]
1976	816	643	1,053	–	471	177	332	–	531	496	–	1,641	1,473
1977	2,008	1,499	1,371	–	286	201	255	–	563	–	–	1,202	1,052
1978	2,487	1,062	1,324	–	498	422	45[f]	–	1,726	–	–	3,499	3,258
1979	1,180	1,134	1,484	–	1,093	414	484	–	1,159[f]	–	–	4,789	4,310[h]
1980	958[f]	1,500	1,330	1,192	954[f]	369[f]	951	–	2,541	–	–	6,757	6,126
1981	2,146[f]	231[f]	807[f]	577[f]	–	791	–	–	600[f]	–	–	1,237	1,121
1982	1,274	851	–	–	–	–	421	–	2,073	–	–	2,534	2,348
1983	–	–	653[f]	376[f]	526	480	572	–	2,553	2,336	–	1,961	1,803
1984	1,573[f]	1,993	841[f]	574[f]	–	–	–	–	501	494	–	1,031	906
1985	1,617	2,248	1,051	720	1,600	1,180	735	–	2,553	2,262	–	2,035	1,860
1986	1,954	3,156	1,116	916	1,452	1,522	1,346	9,065	2,031	1,935	–	3,368	3,031[h]
1987	1,608	3,281	1,174	879	1,145	493	731	6,404	1,312	1,209	4,771	1,898	1,671
1988	1,020	1,448	1,805	1,449	1,061	714	797	3,346	1,966	1,760	4,562	2,761	2,553
1989	1,399	1,089	442[f]	212[f]	–	–	–	2,866	1,260	1,185	3,294	2,333	2,136
1990	2,503	1,545	2,347	1,595	568[f]	430[f,g]	884[f]	5,603	1,436	1,402	10,728	3,744	3,429
1991	1,938	2,544	875[f]	625[f]	757	1,253	1,890	3,025	1,277[f]	1,277[f]	5,608	2,212[f]	1,925[f]
1992[k]	1,030[f]	2,002[f]	1,536	931	348	231	910	5,230	825[f]	799[f]	7,862	1,484[f]	1,436[f]
E.O.[l]	>1500	>1400	>1,300[m]	>600[m]	>800	>500	>600	–	–	>1,700	–	–	>2,500

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted. Latest table revision: April 12, 1993.

[b] From 1961–1970, river count data are from aerial surveys of various segments of the mainstem Anvik River. From 1972–1979, counting tower operated; mainstem aerial survey counts below the tower were added to tower counts. From 1980–present, aerial survey counts for the river are best available minimal estimates for the entire Anvik River drainage. Index area counts are from the mainstem Anvik River between the Yellow River and McDonald Creek.

[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.

[d] Chena River index area for assessing the escapement objective is from Moose Creek Dam to Middle Fork River.

[e] Salcha River index area for assessing the escapement objective is from the TAPS crossing to Caribou Creek.

[f] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.

[g] Boat survey.

[h] Data unavailable for index area. Calculated from historic (1972–91) average ratio of index area counts to total river counts (0.90:1.0).

[i] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.

[k] Preliminary

[l] Interim escapement objectives. Established March, 1992.

[m] Interim escapement objective for the entire Anvik River drainage is 1,300 salmon. Interim escapement objective for mainstem Anvik River between the Yellow River and McDonald Creek is 500 salmon.

Table 9. Chinook salmon escapement counts for selected spawning areas in the Canadian portion of the Yukon River drainage, 1961–1992.[a]

Year	Tincup Creek	Tatchun River[b]	Little Salmon River	Big Salmon River[c]	Nisutlin River[d]	Wolf River[f]	Whitehorse Fishway[g]	Canada Mainstem Tagging Estimate[h]
1961	–	–	–	–	–	–	1,068	–
1962	–	–	–	–	–	–	1,500	–
1963	–	–	–	–	–	–	483	–
1964	–	–	–	–	–	–	595	–
1965	–	–	–	–	–	–	903	–
1966	–	7 [j]	–	–	–	–	563	–
1967	–	–	–	–	–	–	533	–
1968	–	–	173 [j]	857 [j]	407 [j]	–	414	–
1969	–	–	120	286	105	–	334	–
1970	–	100	–	670	615	71 [j]	625	–
1971	–	130	275	275	650	750	856	–
1972	–	80	126	415	237	13	391	–
1973	100	99	27 [j]	75 [j]	36 [j]	–	224	–
1974	–	192	–	70 [j]	48 [j]	–	273	–
1975	–	175	–	153 [j]	249	40 [j]	313	–
1976	–	52	–	86 [j]	102	–	121	–
1977	–	150	408	316 [j]	77	–	277	–
1978	–	200	330	524	375	–	725	–
1979	–	150	489 [j]	632	713	183 [j]	1,184	–
1980	–	222	286 [j]	1,436	975	377	1,383	–
1981	–	133	670	2,411	1,626	395	1,555	–
1982	–	73	403	758	578	104	473	19,790
1983	100	264	101 [j]	540	701	95	905	28,989
1984	150	153	434	1,044	832	124	1,042	27,616 [k]
1985	210	190	255	801	409	110	508	10,730
1986	228	155	54 [j]	745	459 [j]	109	557	16,415
1987	100	159	468	891	183	35	327	13,260
1988	204	152	368	765	267	66	405	23,118
1989	88	100	862	1,662	695	146	549	25,201
1990	83	643	685	1,806	652	188	1,407	37,699
1991	–	–	326	1,040	–	201 [m]	1,266	20,743
1992 [s]	73	106	494	617	241	110 [m]	758	24,359
E.O.[p]								33,000–43,000[p]

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Survey rating is fair to good, unless otherwise noted. Latest table revision: November 18, 1992.
[b] All foot surveys except 1978 (boat survey) and 1986 (aerial survey).
[c] For 1968, 1970, and 1971 counts are from mainstem Big Salmon River. For all other years counts are from the mainstem Big Salmon River between Big Salmon Lake and the vicinity of South Creek.
[d] One Hundred Mile Creek to Sidney Creek.
[f] Wolf Lake to Red River.
[g] Includes 50, 90, 292, 506, 243 fin–clipped hatchery–origin salmon in 1988, 1989, 1990, 1991, and 1992 respectively.
[h] Estimated total spawning escapement excluding Porcupine River (estimated border escapement minus the Canadian catch).
[j] Incomplete and/or poor survey conditions resulting in minimal or inaccurate counts.
[k] Estimate derived by dividing the annual 5–area (Whitehorse Fishway, Big Salmon, Nisutlin, Wolf, Tatchun) count by the average proportion of the annual 5–area index count to the estimated spawning escapements from the DFO tagging study for years 1982, 1983, and 1985–1989.
[m] Counts are for Wolf Lake to Fish Lake outlet.
[s] Preliminary
[p] Interim escapement objective. Stabilization escapement objective for years 1990 – 1995 is 18,000 salmon.

Table 10. Summer chum salmon escapement counts for selected spawning areas in the Yukon River drainage, 1973–1992.[a]

Year	Andreafsky River			Anvik River		Nulato River		Gisasa River	Hogatza River (Clear and Caribou Crs)	Chena River	Salcha River
	East Fork		West Fork	Tower & Aerial[b]	Sonar	South Fork	North Fork[c]				
	Aerial	Sonar or Tower									
1973	10,149[d]	–	51,835	86,665[d]	–	–	–	–	–	79[d]	–
1974	3,215[d]	–	33,578	201,277	–	29,016	29,334	22,022	–	4,349	3,510
1975	223,485	–	235,954	846,485	–	51,215	87,280	56,904	22,355	1,670	7,573
1976	105,347	–	116,420	406,166	–	9,230[d]	30,771	21,342	20,744	685	6,474
1977	112,722	–	63,120	262,854	–	11,385	58,275	2,204[d]	10,734	610	677[d]
1978	127,050	–	57,321	251,339	–	12,821	41,659	9,280[d]	5,102	1,609	5,405
1979	66,471	–	43,391	81,830[d]	280,537	1,506	35,598	10,962	14,221	1,025[d]	3,060
1980	36,823[d]	–	114,759	–	492,676	3,702[d]	11,244[d]	10,388	19,786	338	4,140
1981	81,555	147,312[e]	–	–	1,486,182	14,348	–	–	–	3,500	8,500
1982	7,501[d]	181,352[e]	7,267[d]	–	444,581	–	–	334[d]	4,984[d]	1,509	3,756
1983	–	110,608[e]	–	–	362,912	1,263[d]	19,749	2,356[d]	28,141	1,097	716[d]
1984	95,200[d]	70,125[e]	238,565	–	891,028	–	–	–	–	1,861	9,810
1985	66,146	–	52,750	–	1,080,243	10,494	19,344	13,232	22,566	1,005	3,178
1986	83,831	167,614[f]	99,373	–	1,189,602	16,848	47,417	12,114	–	1,509	8,028
1987	6,687[d]	45,221[f]	35,535	–	455,876	4,094	7,163	2,123	5,869[d]	333	3,657
1988	43,056	68,937[f]	45,432	–	1,125,449	15,132	26,951	9,284	6,890	432	2,889[d]
1989	21,460[d]	–	–	–	636,906	–	–	–	–	714[d]	1,574[d]
1990	11,519[d]	–	20,426[d]	–	403,627	3,186[d,g]	1,419[d]	450[d]	2,177[d]	100[d]	450[d]
1991	31,886	–	46,657	–	847,772	13,150	12,491	7,003	9,947	10[d]	154[d]
1992[p]	11,308[d]	–	37,808[d]	–	775,626	5,322	12,358	9,300	2,986	848[d]	3,222
E.O.[h]	>109,000	–	>116,000	–	>500,000[i]	–	>53,000[k]	–	>17,000[m]	–	>3,500

[a] Data obtained by aerial survey unless otherwise noted. Only peak counts are listed. Latest table revision November 18, 1992.
[b] From 1972–1979, counting tower operated; mainstem aerial survey counts below the tower were added to tower counts.
[c] Includes mainstem counts below the confluence of the North and South Forks, unless otherwise noted.
[d] Incomplete survey and/or poor survey timing or conditions resulted in minimal or inaccurate count.
[e] Sonar count.
[f] Tower count.
[g] Mainstem counts below the confluence of the North and South Forks Nulato River included in the South Fork counts.
[h] Interim escapement objective.
[i] The Anvik River Escapement Objective was rounded upward to 500,000 from 487,000 in March, 1992.
[k] Interim escapement objective for North Fork Nulato River only.
[m] Consists of Clear and Caribou Creeks interim escapement objectives of 9,000 and 8,000, respectively.
[p] Preliminary.

Table 11. Fall chum salmon escapement counts for selected spawning areas in the Yukon River drainage, 1971–1992.[a]

Year	Toklat River[b]	Delta River[c]	Chandalar River[d]	Sheenjek River[d]	Fishing Branch River[e]	Canada Mainstem Tagging Estimate[f]
1971	–	–	–	–	312,800	–
1972	–	–	–	–	35,125[g]	–
1973	–	–	–	–	15,989[h]	–
1974	43,484	5,915	–	89,966[j]	32,525[h]	–
1975	90,984	3,734[k]	–	173,371[j]	353,282[h]	–
1976	53,882	6,312[k]	–	26,354[j]	36,584	–
1977	36,462	16,876[k]	–	45,544[j]	88,400	–
1978	37,057	11,136	–	32,449[j]	40,800	–
1979	179,627	8,355	–	91,372[j]	119,898	–
1980	26,373	5,137	–	28,933[j]	55,268	–
1981	15,775	23,508	–	74,560	57,386[m]	–
1982	3,601	4,235	–	31,421	15,901	31,958
1983	20,807	7,705	–	49,392	27,200	90,875
1984	16,511	12,411	–	27,130	15,150	56,633[n]
1985	22,805	17,276[k]	–	152,768	56,016[h]	62,010
1986	18,903	8,703[k]	59,313	83,197	31,723[h]	87,990
1987	22,141	21,180	52,416	140,086	48,956[h]	80,776
1988	13,324	18,024	33,619	41,073	23,597[h]	38,786
1989	30,447	21,342[k]	69,161	101,748[p]	43,834[h]	35,750
1990	33,672	8,992[k]	78,631	65,721[q]	35,000[r]	51,755
1991	13,197	32,905[k]	–	90,000[s]	37,733[h]	78,461
1992[t]	10,813	8,893[k]	–	79,315	22,517[h]	46,772
E.O.[u]	> 33,000	> 11,000	–	> 64,000[v]	50,000 – 120,000	> 80,000

[a] Latest table revision February 11, 1993.
[b] Total escapement estimates using Delta River migratory time density curve and percentage of live salmon present by survey date in upper Toklat River area.
[c] Total escapement estimates made from migratory time density curve (see Barton 1986), unless otherwise indicated.
[d] Sonar estimate. From 1981–1985 sonar operations were initiated between August 29 and September 2. From 1986–1990 sonar operations were initiated between August 17 and August 25. For 1991 and 1992 sonar operations were initiated on August 9.
[e] Total escapement estimates using weir to aerial survey expansion factor of 2.72, unless otherwise indicated.
[f] Excludes Fishing Branch River escapment (estimated border passage minus Canadian removal).
[g] Weir installed on September 22. Estimate consists of a wier count of 17,190 after September 22, and a tagging passage estimate of 17,935 prior to weir installation.
[h] Weir estimate.
[j] Total escapement estimates using sonar to aerial survey expansion factor of 2.221.
[k] Population estimate from replicate foot surveys and stream life data.
[m] Initial aerial survey count was doubled before applying the weir/aerial expansion factor of 2.72 since only half of the spawning area was surveyed.
[n] Escapement estimate based on mark–recapture program unavailable. Estimate based on assumed average exploitation rate.
[p] Includes a passage estimate of 20,000 salmon prior to initation of sonar–monitoring operations.
[q] Weir was not operated. Although only 7,541 chum salmon were counted on a single survey flown October 26, a population estimate of approxdately 27,000 fish was made through date of survey, based upon historic average aerial–to–weir expansion of 28%. Actual population of spawners was reported by DFO as between 30,000 – 40,000 fish in view of aerial survey timing.
[r] Preliminary.
[s] Interim escapement objective.
[t] Based on escapement estimates for years 1974–1990.
[u] Data unavailable at this time.

Table 12. Coho salmon escapement counts for selected spawning areas in the Yukon River drainage, 1972-1992.[a]

Year	Andreafsky River		Anvik River	Kantishna River		Nenana River Drainage				Delta Clearwater River[d,f]	Clearwater Lake and Outlet	Richardson Clearwater River
	East Fork	West Fork		Geiger Creek	Barton Creek	Lost Slough	Nenana Mainstem[b]	Wood Creek[c]	17-Mile Slough			
1972	-	-	-	-	-	-	-	-	-	630	417	464[h]
1973	-	-	-	-	-	-	-	-	-	3,322	551[d]	375[d]
1974	-	-	-	-	-	1,388	-	-	27	3,964[g]	560	652[d]
1975	-	-	-	-	-	943	-	-	956	6,100	1,575[d,f]	4[h]
1976	-	-	467[h]	25[j]	-	118	-	-	281	1,920	1,500[d,f]	80[h]
1977	-	-	81[h]	60	-	524	-	310[j]	1,167	4,793	730[d,f]	327
1978	-	-	-	-	-	350	-	300[j]	466	4,798	570[d,f]	-
1979	-	-	-	-	-	227	-	-	1,987	8,970	1,015[d,f]	372
1980	-	-	-	3[j]	-	498	-	1,603[j]	592	3,946	1,545[d,f]	611
1981	1,667[h]	-	-	-	-	274	-	849[k]	1,005	8,563[m]	459[h]	550
1982	-	-	-	81[j]	-	-	-	1,436[k]	-	8,365[m]	-	-
1983	-	-	-	42[j]	-	766	-	1,044[k]	103	8,019[m]	253	88
1984	-	-	-	20	-	2,677	-	8,805[k]	-	11,061	1,368	428
1985	-	-	-	42	-	1,584	-	3,775[k]	2,081	5,358	750	-
1986	-	-	-	5[j]	496	794	-	1,664[k]	218[e,f]	10,857	3,577	146[h]
1987	-	-	-	1,175[j]	-	2,511	-	2,450[k]	3,802	22,300	4,225[d,f]	-
1988	1,913	830	1,203	159[j]	437	348	-	2,046[k]	-	21,600	825[d,f]	-
1989	-	-	-	155[j]	12[h]	-	-	412[k]	824[h]	11,000	1,600[d,f]	483
1990	-	-	-	211[j]	-	688	1,308	-	15[h]	8,325	2,375[d,f]	-
1991	-	-	-	427[j]	467[h]	564	447	-	52	23,900	3,150[d,f]	-
1992[n]	-	-	-	77[j]	55[h]	372	-	-	490	3,983	229[d,f]	500[d]
E.O.[p]										9,000		

[a] Only peak counts presented. Survey rating is fair to good, unless otherwise noted. Latest table revision: April 28, 1993.
[b] Mainstem Nenana River between confluences of Lost Slough and Teklanika River.
[c] Surveyed by F.R.E.D.
[d] Surveyed by Sport Fish Division.
[f] Boat survey.
[g] Aerial Survey
[h] Poor Survey.
[j] Foot Survey.
[k] Weir Count.
[m] Expanded estimated based on partial survey counts and historic distribution of spawners from 1977-1980.
[n] Preliminary
[p] Interm escapement objective established March, 1993.